

100 failure detection system

FIG. 1

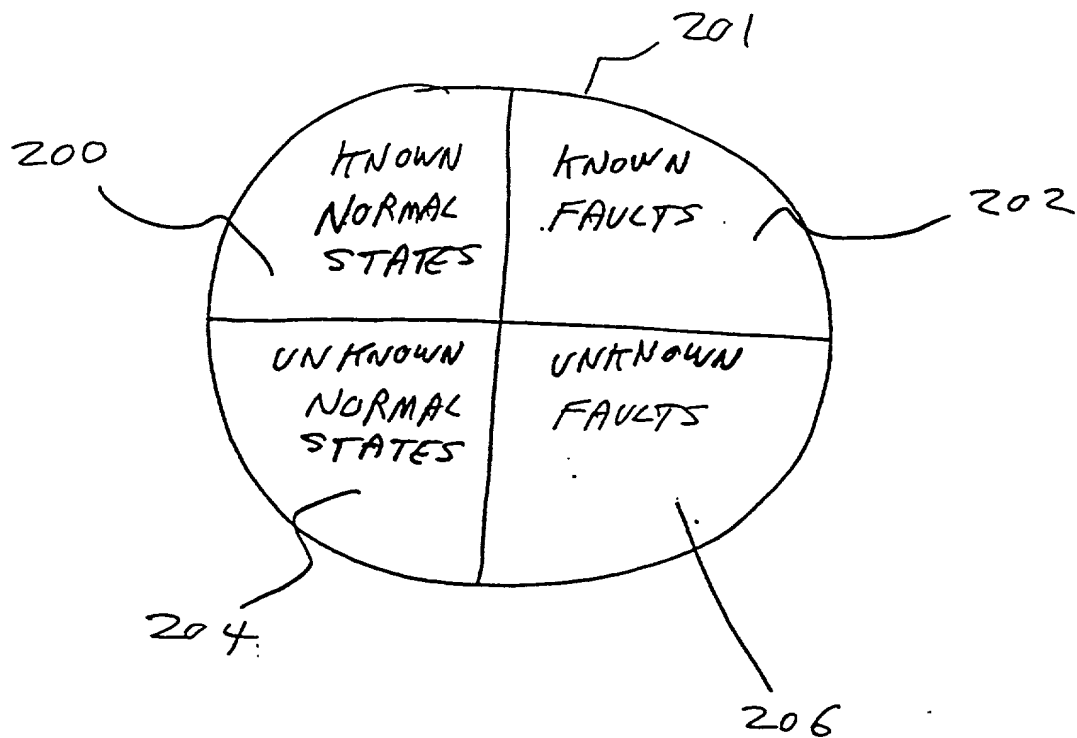
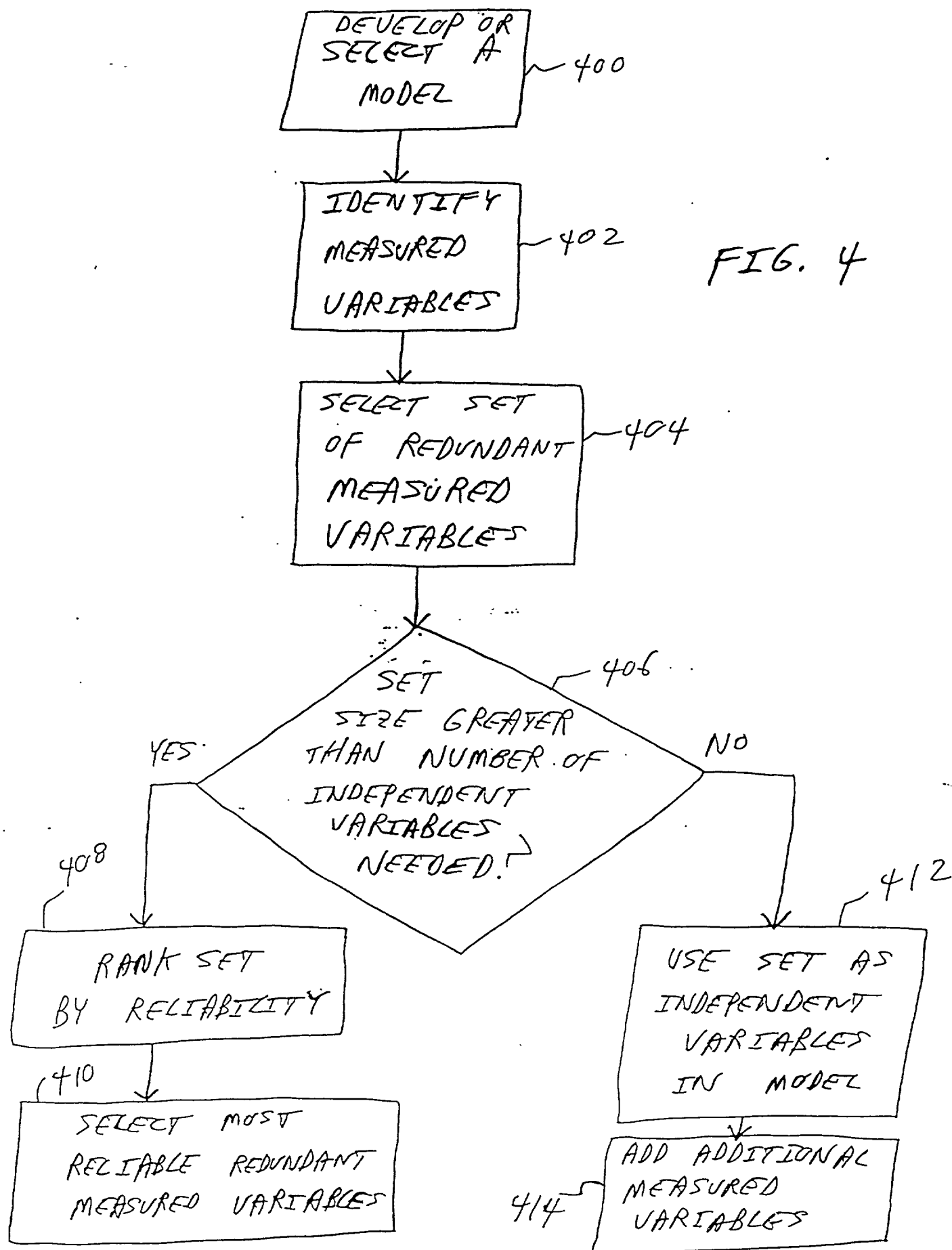


FIG. 2

09725928.13000

09726928.13000



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graph TD
    500[FORMULATE MODEL  
TO USE SELECTED  
REDUNDANT VARIABLES  
AS INDEPENDENT  
VARIABLES] --> 502[DETERMINE EXPECTED  
OUTPUT VARIABLES  
USING MODEL]
    502 --> 504[COMPARE RESIDUALS  
BETWEEN EXPECTED  
AND MEASURED  
OUTPUT VARIABLES]
    504 --> 506[ANALYZE RESIDUALS  
TO DETECT  
FAULT]
  
```

FIG. 5

ACTUAL MEASURED VARIABLES	CORRESPONDING PHYSICAL CONDITION
P2	Inlet Pressure
T2	Inlet Temperature
N1	Low-Pressure Spool Speed
N2	High-Pressure Spool Speed
P3	Compressor Discharge Pressure
T5	Turbine Temperature
x _{wf}	Fuel Metering Valve Position

DERIVED VARIABLE	CORRESPONDING PHYSICAL CONDITION
T4	Turbine Inlet Temperature

FIG. 6